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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,135	02/12/2002	Peter Thoma	US 20 01 0575	6579

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EXAMINER

RODRIGUEZ, ARMANDO

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/074,135	Applicant(s) THOMA ET AL.	
	Examiner ARMANDO RODRIGUEZ	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7,8 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,8 and 13-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Claims 1-5,7,8,13-19 are pending.

Claims 6,9-12 have been canceled.

The 35 USC 112 second paragraph rejection has been withdrawn based on applicant's amendment filed on March 17, 2004.

Response to Arguments

Applicant's arguments with respect to claims 1-5,7,8,13-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said beam splitter" in line 12. There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 1,

Applicant has failed to define the structural relationship of the beam splitter within the laser source.

It is not clear within the claim language, if applicant intended to recite the limitation of a beam splitter since applicant's amendment has deleted "a beam splitter" in line 17.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Tayebati (PN 5,949,801).

Tayebati pertains to a tunable laser system, which uses a tunable filter as a wavelength selective element.

In figure 1 Tayebati illustrates a tunable laser having a gain medium (10) with facets (20 and (25), a concave mirror (30) which defines the laser cavity, a tunable filter (35) disposed between the gain medium and the concave mirror for selecting the desired wavelength, and a focusing lens (70), as described in column 1 line 52 to column 4 line 10. Figure 1 illustrates the gain medium, the concave mirror and the tunable filter spatial alignment.

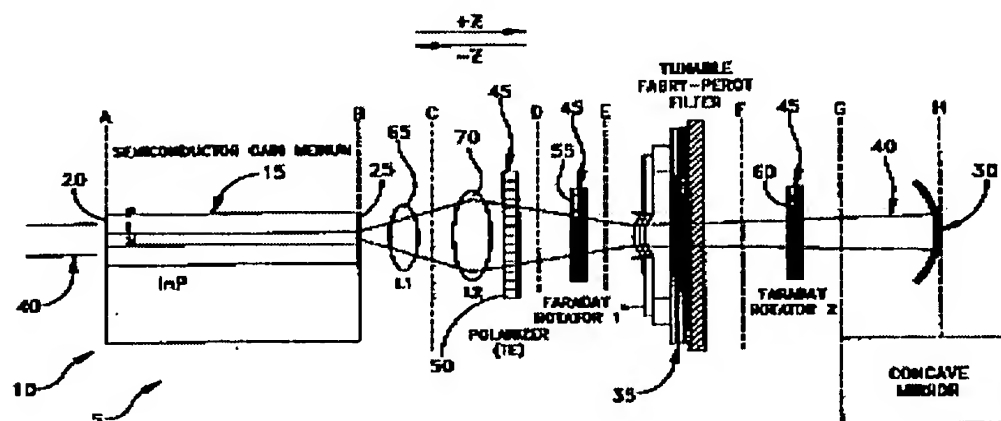


FIG. 1

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,2,8,16,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tayebati (PN 5,949,801) in view of Loh et al (PN 5,172,382).

Tayebati pertains to a tunable laser system, which uses a tunable filter as a wavelength selective element.

Regarding claims 1,2,8,

In figure 1 Tayebati illustrates a tunable laser having a gain medium (10) with facets (20 and (25), a concave mirror (30) which defines the laser cavity, a tunable filter (35) disposed between the gain medium and the concave mirror for selecting the desired wavelength, and a focusing lens (70), as described in column 1 line 52 to column 4 line 10. Figure 1 illustrates the gain medium, the concave mirror and the tunable filter in spatial alignment.

Tayebati does not illustrate a beam splitter in a spatially linear cavity.

However, the use of beam splitters in the laser systems is notoriously well known in the art for separating the beam and directing the beam in different directions, as documented in 1992 and illustrated in figures 1 and 6 of Loh et al.

Regarding claims 16 and 17,

Tayebati as applied to claim 13, does not illustrate a beam splitter in a spatially linear cavity.

However, the use of beam splitters in the laser systems is notoriously well known in the art for separating the beam and directing the beam in different directions, as documented in 1992 and illustrated in figures 1 and 6 of Loh et al.

Claims 1,3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zorabedian et al (PN 6,282,215) in view of Byer (PN 5,673,281) and Loh et al (PN 5,172,382).

Zorabedian et al pertains to a tunable laser system, which uses a tunable filter for wavelength selection.

Regarding claim 1,

Zorabedian et al illustrates in figure 1A, a tunable laser having a laser diode (102) with two facets (104) and (106), a retro-reflective mirror (122), which provide output coupling, a tunable etalon (162), which filters the wavelength and a focusing lens (110), as described in column 5 lines 29-47. Figure 1A illustrates the laser diode, the mirror, the etalon and the lens in spatial alignment.

Zorabedian illustrates in figure 1A the mirror (122) having a flat or planar shape but Zorabedian et al is silent as to the mirror having a curved shape as claimed by applicant.

Byer illustrates in figures 1-3 a combination of mirrors forming a cavity, where in figure 1 the combination consist of a flat mirror (14) with a flat output coupling mirror

Art Unit: 2828

(16), figure 2 illustrates a combination of a concave mirror (44) with a flat output mirror (16) and figure 3 illustrates a combination with a concave mirror (44) and a concave output mirror (54), which demonstrates, suggest and teaches that the output mirror can be either flat or curved, as described in column 5 lines 57-59 and column 6 lines 62-65.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to provide the laser system of Zorabedian et al with a flat or curved output mirror as illustrated by Byer because the flat or curved mirror will provide partial transmission and partial reflection of the output beam.

Zorabedian does not illustrate a beam splitter in a spatially linear cavity.

However, the use of beam splitters in the laser systems is notoriously well known in the art for separating the beam and directing the beam in different directions, as documented in 1992 and illustrated in figures 1 and 6 of Loh et al.

Regarding claim 3,

The laser diode (102) illustrated in figure 1A of Zorabedian et al does have a back facet (104), which outputs a portion of the laser beam as beam (152), as described in column 5 lines 42-46.

Regarding claim 7,

The retro-reflective mirror (122) illustrated in figure 1A of Zorabedian does provide output coupling of the beam.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zorabedian et al (PN 6,282,215) in view of Byer (PN 5,673,281) and Loh et al (PN

5,172,382) as applied to claim 1 above, and further in view of Mattorri et al (PN 6,081,539).

Regarding claims 4 and 5,

The etalon (162) illustrated in figure 1A of Zorabedian et al, which provides wavelength filtering is composed of optical elements (120) and (130). In column 6 lines 16-19, Zorabedian et al discloses translating optical element (120) for varying the path length of the cavity in synchronization with the filtered wavelength by the etalon. In column 5 lines 26-28, Zorabedian discloses the device of figure 1A allows for tuning of the wavelength and adjustment of the cavity length to avoid mode hopping.

Zorabedian et al is silent as to providing translation of either the gain medium or the end cavity mirror.

Mattorri et al discloses in column 2 lines 62-65, preventing mode hopping is accomplished by synchronously changing the resonance wavelength and the selected wavelength. In figure 7 Mattorri et al illustrates a tunable laser, which prevents mode-hopping, having a diffraction section 2 including a diffraction grating (21), which also serves as a reflector (22), where the synchronization of cavity length and wavelength selection is provided by control section (5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the teachings of Mattorri et al to the tunable laser of Zorabedian et al because translating the etalon filter (162) or translating the mirror (122) as suggested by Mattorri et al the tunable laser will prevent mode-hopping.

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zorabedian et al (PN 6,282,215) in view of Byer (PN 5,673,281).

Regarding claim 13,

Zorabedian et al illustrates in figure 1A, a tunable laser having a laser diode (102) with two facets (104) and (106), a retro-reflective mirror (122), which provide output coupling, a tunable etalon (162), which filters the wavelength and a focusing lens (110), as described in column 5 lines 29-47. Figure 1A illustrates the laser diode, the mirror, the etalon and the lens in spatial alignment.

Zorabedian illustrates in figure 1A the mirror (122) having a flat or planar shape but Zorabedian et al is silent as to the mirror having a curved shape as claimed by applicant.

Byer illustrates in figures 1-3 a combination of mirrors forming a cavity, where in figure 1 the combination consist of a flat mirror (14) with a flat output coupling mirror (16), figure 2 illustrates a combination of a concave mirror (44) with a flat output mirror (16) and figure 3 illustrates a combination with a concave mirror (44) and a concave output mirror (54), which demonstrates, suggest and teaches that the output mirror can be either flat or curved, as described in column 5 lines 57-59 and column 6 lines 62-65.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to provide the laser system of Zorabedian et al with a flat or curved output mirror as illustrated by Byer because the flat or curved mirror will provide partial transmission and partial reflection of the output beam.

Regarding claim 14,

The retro-reflective mirror (122) illustrated in figure 1A of Zorabedian does provide output coupling of the beam.

Regarding claim 15,

The laser diode (102) illustrated in figure 1A of Zorabedian et al does have a back facet (104), which outputs a portion of the laser beam as beam (152), as described in column 5 lines 42-46.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zorabedian et al (PN 6,282,215) in view of Byer (PN 5,673,281) as applied to claim 13 above, and further in view of Mattorri et al (PN 6,081,539).

Regarding claims 18 and 19,

The etalon (162) illustrated in figure 1A of Zorabedian et al, which provides wavelength filtering is composed of optical elements (120) and (130). In column 6 lines 16-19, Zorabedian et al discloses translating optical element (120) for varying the path length of the cavity in synchronization with the filtered wavelength by the etalon. In column 5 lines 26-28, Zorabedian discloses the device of figure 1A allows for tuning of the wavelength and adjustment of the cavity length to avoid mode hopping.

Zorabedian et al is silent as to providing translation of either the gain medium or the end cavity mirror.

Mattorri et al discloses in column 2 lines 62-65, preventing mode hopping is accomplished by synchronously changing the resonance wavelength and the selected wavelength. In figure 7 Mattorri et al illustrates a tunable laser, which prevents mode-

Art Unit: 2828

hopping, having a diffraction section 2 including a diffraction grating (21), which also serves as a reflector (22), where the synchronization of cavity length and wavelength selection is provided by control section (5).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARMANDO RODRIGUEZ
Examiner
Art Unit 2828



MINSUN HARVEY
Supervisor
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